

DETECTION OF ISLANDED BEHAVIOR AND ANTI-ISLANDING PROTECTION OF A GENERATOR IN GRID-CONNECTED MODE

Abstract

A method of controlling a generator system connected to an electric power system in which the output frequency characteristic of the generator system is measured, a first phase angle and frequency of the measured frequency characteristic is estimated using a first phase locked loop having a first bandwidth, and a second phase angle and frequency of the measured frequency characteristic is estimated using a second phase locked loop having a second bandwidth greater than the first bandwidth. Further, the method calculates a frequency difference between the first and second estimated frequencies, and an angle variation that is proportional to the calculated frequency difference. The estimated second phase angle is then added to the calculated angle variation so as to form an output current phase angle reference, and an output current phase angle of the generator system is controlled to be aligned with the output current phase angle reference. The method also determines whether or not the generator system is within a generation island based on the measured frequency characteristic.